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ABSTRACT

A number of different methods have been used by instructional television (ITV) projects to obtain audience feedback, and some of these are now being used in the ITV system in El Salvador. We know that pretesting programs on a representative sample can bring considerable gains in learning. Another feedback source can be a classroom of pupils in the production studio, or a small number of students participating in programs on camera. Some projects teaching advanced material have used a talk-back system that permits students to use remote microphones to talk to studio teachers and to have their questions or comments broadcast to the whole audience. A device found on almost all projects is classroom testing. Because tests are time-consuming they are often separated by wide intervals. However weekly tests can be provided over television, and the results quickly integrated into program content. Finally, regular comments from classroom teachers, supervisors and utilization workers are common to many projects. And although ITV in El Salvador uses some of these techniques, current feedback channels should be strengthened, and new ones developed. (MG)

ED 069135

"FEEDBACK"

FOR INSTRUCTIONAL TELEVISION

WILBUR SCHRAMM

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RESEARCH MEMORANDUM NO. 3

This is one of a series of reports of research on the Educational Reform Program of El Salvador, and especially its use of instructional television.
This report has been prepared by members of the Institute for Communication Research, Stanford University, on behalf of the Academy for Educational Development, under contract with the U.S. Agency for International Development.

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"FEEDBACK" FOR INSTRUCTIONAL TELEVISION

A teacher in a classroom is in good position to know how the lesson is going. He can see whether his pupils are paying attention. By watching their faces and their movements, he can make a good guess as to whether they are interested. If he has any doubt as to whether they are understanding, he can ask a few questions. If he wants to know whether everyone has learned the day's lesson, he can give a brief test. And if the pupils themselves are having any difficulties, they can ask for help or explanation. Thus the teacher is in position at all times to know whether learning is going on, and, if not, what to do about it: more explanation, more drill, more examples, a different approach, slower rate of exposition, or what.

A television teacher, on the other hand, does not have instant access to such information. Even if he has pupils in the studio, and can watch them, still he cannot possibly watch all the classrooms where his program is being received. Usually, he teaches to the camera rather than to students. No one can ask him a question during the program, nor can he see whether attention is good and interest is high in the classrooms. He cannot ask a quick question to find out whether students are getting his point. He cannot help an individual student who is in difficulty. Often he has to wait weeks or months for comments from the classroom, or for test results.

For this reason, most instructional television projects make special efforts to obtain "feedback" from the classrooms that are

using the televised lessons. Feedback is a word borrowed from electronics and used by communication theorists to denote the information that comes back to a communicator by which he can judge the effectiveness of his message. In an ITV project there is nothing "theoretical" or impractical about a feedback system: It is simply a way to substitute for the kind of information on pupil response easily available to a classroom teacher. It is immensely important to the studio teacher because he is responsible for a great number and variety of pupils, and the effect of a mistake or misjudgment in tactics is therefore multiplied.

The purpose of this memorandum is to describe briefly a number of the different methods that have been used by instructional television projects to obtain feedback information.

Needless to say, no ongoing ITV project has ever claimed to have achieved an ideal system of feedback. The enormous initial effort required to master the technique and technology of ITV usually leaves all too little time and money for "software" needs, and amongst these the need for feedback usually rates far below the need for programs. Nevertheless, most of the recent major ITV projects in developing countries have built in some kind or kinds of provision for feedback. The most common one (as, for example, in Samoa) is to ask classroom teachers each week to fill in checklists of comments on the television programs. Some projects (for example, Colombia) have provided for a group of utilization specialists to visit classrooms at regular intervals, both to assist the teacher in solving

the problems of using television and also to report back on classroom responses to the programs. A very few projects (for example, Niger, in the early years of the television experiment there) have provided for research personnel to observe and study closely what happens in the classroom.

The architects of the El Salvador educational reform program have been aware of these precedents, and have built several feedback channels into their plans. The following pages will serve as a checklist by which to compare what El Salvador is doing in this respect against what might be done. Let us hasten to say, however, that no ITV project up to this time has ever made use of all the methods listed in this memorandum, and probably no project ever will or should. The preferred strategy is to select some combination of feedback methods to serve local needs and fit local capabilities. For El Salvador readers of this memorandum, let us suggest two questions: Are there additional feedback channels that should be added to those presently in use? And, what, if anything, needs to be done to make existing feedback channels work more efficiently?

The methods to be described in this memorandum are:

1. Pretesting programs
2. Teaching to pupils in the studio
3. Immediate electronic feedback from the classroom
4. Testing at frequent intervals on learning of program content
5. Obtaining regular comments from classroom teachers

6. Making regular observations of classroom activity

7. Obtaining regular reports on attitudes of pupils and teachers

8. Obtaining reports on specific problems

9. Expert reviews of programs and materials

Pretesting programs

Ideally, every ITV program should be tested on a representative sample of the intended audience before it is broadcast to the entire school system. We know that pretesting and revising can bring about spectacular improvement; evidence of this is the Lumsdaine and Gropper experiment of 1961, in which students learned a great deal more from science lessons that had been pretested and revised than from the lessons in their original form. When the lesson was tested and revised twice, there was still more learning. No teleteacher, no matter how expert, can be completely confident that his televised programs will accomplish everything they are expected to until they have been tried on students: That is the reason for pretesting.

However, pretesting and revision are expensive and time-consuming. They are often resisted by producers who are trying to keep a schedule, by teleteachers who are sensitive to criticism, and by program personnel in general who are aware of the artistic element in programming and don't want to see it diluted by a scientific attitude toward the effect of teaching. Therefore, the usual compromise is to test a few prototype programs -- programs that can be made far

enough in advance to leave time for testing, and are sufficiently representative so that the results of testing them will throw light on the way the entire series should be taught.

Pretesting is research, and should be planned and conducted by persons trained in research. Essentially it is a simple process, however. The prototype is screened for a classroom or several classrooms of students. It is necessary to know enough about the students to make sure they represent other students, or different groups of the students, for whom the programs are being made. It is necessary to have a spread of abilities in the sample, so that the teacher can be sure he is not overreaching or underreaching. It is necessary to have a clear statement of what the program is expected to teach, so that tests can be based on these objectives. Unless the subject matter is completely new to the students, it is customary to give matched tests before and after the showing so as to measure the change brought about by the program. The attention and interest of the students are observed or measured by whatever method seems best to the researchers. If there is any considerable misunderstanding or failure to learn, students who have done poorly are often interviewed individually in order to find out where the teaching has gone wrong. Then the results and recommendations are presented to the program personnel.

Even a single prototype program from each series, carefully tested long enough in advance to influence the rest of the series, can make a notable difference in the effectiveness of a televised

course. When the ideal project, if any, is designed, a program of testing prototype programs will probably be combined with an ongoing program of basic research, so that teaching problems revealed by the prototypes can be studied in depth, alternative solutions can be tried, and the results of the basic studies can be incorporated into generalizations on ITV method. But this is ideal; even a few prototype tests are as yet uncommon in ITV projects.

Pupils in the studio

One of the feedback devices most commonly used in instructional television is the presence of pupils in the studio. This has the advantage of giving the teacher much of the same information he would get if he were teaching in the classroom: He can observe the responses of his pupils, he can sometimes ask them questions, if he requires responses from his television audience he can time those responses by his studio class. The disadvantage of this method is that some pupils may get shortchanged. For example, if one teaches to a camera so as to be looking at his classroom audience, he isn't likely to be teaching directly to his studio audience. If he allows his studio audience to interrupt and ask questions, as a classroom audience might, he may very well lose some of his classroom audience. And although the research seems to show that a studio class learns as much from the teleteacher as does the classroom group (see Wolgamuth, 1961), still it is clear that moving a class into the kind of studio typically used for taping ITV broadcasts, full of

cameras, lights, and cables, would disrupt not only the school hours adjacent to the television, but also the classroom teacher's contribution to the course.

Recently, a variant of the studio class has come into wide use. This is the selection of a small number of students -- generally from one to six -- to participate in the program, on camera. (Studio classes are usually off-camera.) The teleteacher uses these students to help him conduct experiments or demonstrations, to respond where class response is expected, sometimes to ask questions or answer questions. Thus he is able to time his presentation, and to address his remarks to persons rather than to an impersonal camera; and the students themselves provide a focus of interest for the classroom viewers. So far as we know, no research has been done directly on this practice, but in general the reports on it are favorable.

Immediate feedback from the classroom

The more advanced a class and the more complex the subject, the more frustrated a classroom pupil becomes at not being able to ask questions or otherwise speak up during a television presentation. For this reason, a number of two-way communication systems have been tried in experimental ITV projects. At Pennsylvania State University, for example, several versions of a classroom "talkback" system were tried (see Greenhill, 1964). These permitted any student to signal that he wanted to ask a question or make a comment, and at an appropriate time the teleteacher could give him permission to speak into

a classroom microphone and, in effect, go on the air. These systems seemed to be effective in reducing the frustration of articulate college students being taught by television, and also furnished a certain amount of feedback to the teleteacher. In a large educational system, like that of El Salvador, however, they would prove infeasible both because of the cost of the feedback link and because any considerable number of questions and comments from so many classrooms would disrupt and disorganize the relatively brief and condensed television presentation.

A few projects have installed a television monitor in the studio presenting a picture of one of the classes to whom the television program is being shown (for example, see Bretz, 1967). In some cases, a loud-speaker, tuned low, also has been used so that the teleteacher can time class responses. This requires a low-cost camera in the classroom, and a closed-circuit or other carrier from classroom to studio. The advantage is clear; the disadvantage is that the sample classroom may not represent others.

Regular testing on program content

Any ITV project gets some feedback from classroom testing. Usually this comes so late (at the end of the year or of a term) that the teleteacher and the production staff can no longer correct any problems that are revealed. However, there is no reason why a weekly test should not be given, preferably using five minutes of the television itself, so that questions can be presented in the

same way and at the same time to all classes. It would be possible to make the tests brief and correctable by the students or very quickly by the teacher (multiple-choice or short-answer tests) so that results of the tests could be known, if necessary through television reports, within a few hours. This would allow time to review subject matter, if necessary, or to introduce different approaches to the topic.

Such tests, of course, would require the program people to decide clearly and sharply what they expect the students to learn from a given week of television, and what answers will test whether the desired learning has occurred. The experience of school systems has been, however, that it is more difficult to get learning objectives stated in behavioral terms, than to frame questions to test the desired behavior.

If a quick-feedback system like this one is going to work effectively, it will be necessary to create an atmosphere in which the classroom teacher does not think he is being tested, but rather is furnishing information to help the teleteacher do a better job. Similarly, if the tests are to be graded by the students it will be necessary to separate them from grades in the courses, so that the students will not be tempted to copy answers or to report falsely high grades.

Regular comments from classroom teachers

This is the feedback device most commonly used in ITV projects.

Once a week or once a month -- in a few projects, after every televised class -- the teacher is asked to fill out a report blank for the studio teacher and other program personnel. In order to save the classroom teacher's time, the report is designed so that most responses can be made by checking a statement rather than by writing a comment.

An example of this kind of report form is the one used in American Samoa:

Classroom feedback form (Government of American Samoa, Department of Education)

CLASSROOM TEACHER FEEDBACK
[Make a separate sheet for each subject. Please give complete forms to your principal.]

You, the classroom teacher, are an important part of the television teaching team. You are the one who works directly with the children. We are working together to teach them better. Will you help us do our part more effectively by completing this feedback?

Classroom teacher:	Level:
Date:	School:
Subject:	Unit number:
Studio teacher:	Lesson number:

	Yes	No
Before the telecast		
1. I was able to get materials listed.	[ ]	[ ]
2. The directions were clear to me.	[ ]	[ ]
3. I had enough information to plan well.	[ ]	[ ]
The telecast		
1. The main idea was clear	[ ]	[ ]
2. The pupils understood the main idea.	[ ]	[ ]
3. The pupils were interested.	[ ]	[ ]

The telecast (continued)	Yes	No
4. The pupils could see clearly the things on the screen.	[ ]	[ ]
5. The pupils could hear what was said.	[ ]	[ ]
6. The pupils understood what was said.	[ ]	[ ]
7. The pupils had time to say or to do what the studio teacher asked.	[ ]	[ ]
8. The pupils had time to read what was written by the studio teacher.	[ ]	[ ]

After the telecast

1. There were enough activities listed to keep all of the children busy.	[ ]	[ ]
2. The pupils were very interested.	[ ]	[ ]
3. The pupils wanted to study more after the telecast.	[ ]	[ ]
4. I could use the follow-up materials.	[ ]	[ ]
5. I had time to do the activities.	[ ]	[ ]

Comments

[If lesson was not suitable, please say why. Suggest other activities that you have used for this lesson or that you think would be helpful. Use back of page if necessary.]

Note that this form tries to obtain feedback, not only on the televised class, but also on the materials furnished the classroom teacher for his part of the class hour. Note also that the most commonly expected problems are represented in an inventory which can be answered by checking, and that, in addition to this, the teacher has an opportunity to state at greater length any suggestions he has, or problems he has encountered with the lesson.

The problems encountered with a form like this are in (a) getting prompt and regular responses from classroom teachers, (b) getting information in sufficient detail to know what changes to

make as a result of it, and (c) relating the often rather generalized remarks on the form to specific programs or parts of programs. The best solutions to the first problem have usually been to have visiting supervisors or school principals collect the forms. No completely satisfactory solution has been found to the second problem. Teachers are much less willing to set down a thoughtful comment or suggestion than to check a set of statements. When they write a comment it is most often something pleasing ("Class going fine," "Like the way you are teaching,"), rather than suggestions for improvement. Yet the most useful information usually comes from specific comments and suggestions. If there is a rash of comments that "the television teacher went too fast," or that "materials were not available," then the central office knows what to do. But if a number of the blanks report, for example, that "the pupils did not understand the main idea," then more investigation is called for. Someone will have to talk to teachers and students, in order to find out why the lack of understanding occurred. On the other hand, if teachers could have reported, for example, that pupils did not understand the Pythagorean theorem because they did not clearly understand the idea of squaring, then the teacher would have known that some review was called for. A combination of this technique with short quizzes to pinpoint student problems suggests itself here. Business and industry often encourage their employees to submit thoughtful suggestions by offering rewards for the most useful ones. Some version of this might be tried in school systems.

The third problem -- relating comments to a particular program or program segment -- becomes more difficult the more programs are covered in a single report. Yet most schools try to protect their teachers from having to fill out a feedback report oftener than once a week for any course. One solution for this would be to divide the work -- in a course with three television classes a week, for example, ask one third of the teacher corps to fill out reports on each day.

Regular observation of classrooms

Television instruction is a kind of team teaching, in which some of the responsibility is carried by the studio teacher, some by the classroom teacher, and some by the teacher who prepares the materials and outlines for class use. Yet, unlike what happens in most team teaching, these three teachers do not meet regularly to plan what each should do in relation to what the other is doing. Rather, they count on the makers of the curriculum outline and teachers guide to ensure that the classroom teacher will fit his part of the teaching to what comes in on the television. Whether this actually happens is in doubt as long as the team teachers are isolated from each other.

When supervisors or utilization officers observe classrooms, they are able to bring back not only a report on what the classroom teachers think of the television teaching, but also a description of what happened during their time in the classroom: how the students reacted, how the class went, and, perhaps most important, how the

classroom teacher is conducting his part of the class period. For comments on how a classroom observation can be conducted, see Research Memorandum No. 1 -- "Measuring Educational Development Through Classroom Interaction," September, 1969.

A simpler, less systematic, but highly effective form of classroom observation can be accomplished by the television teachers themselves. If the televised classes are transmitted from videotape, as most of them are today, every studio teacher can visit a class -- perhaps once a week -- to watch what happens when his own program is broadcast. Some teleteachers worry lest their presence in a classroom would destroy the "liveness" of the broadcast; others have been known to worry lest their appearance in life detract from the personality they have built up on television. So far as the second objection is concerned, the result is usually the opposite: They are received as old friends, and soon find, as television entertainers have long known, that "personal appearances" help rather than hurt their television reputation. So far as the first objection goes, no negative effects have been reported, and even if there had been some, they would easily have been counterbalanced by what the studio teacher learns by seeing his own teaching used in an actual classroom.

Reports on attitudes

Several of the feedback methods we have mentioned provide indirect information on whether students like televised teaching, what they like or dislike about it, whether teachers feel comfortable

with it, degraded by it, or threatened by it, and what they find helpful or difficult, desirable or undesirable, about it. These same questions can be answered directly and more systematically by administering attitude scales. The tests must be made carefully and skillfully so as not to encourage answers that might be thought to be self-serving, or to represent what the tester or the supervisor wants to hear.

Reports on specific problems

Very often, feedback information points to a problem but not to its solution. Test grades at the end of a unit are uncommonly low. Students are showing lack of interest in a certain topic. Many classroom teachers report that their pupils did not understand the main ideas of a week of televised teaching. And so forth. These are clearly problems, but to know what to do about them it is necessary to gather more information and perhaps even to try out a solution or two.

This is the most commonly neglected aspect of ITV feedback systems, probably because it takes time and personnel and has to be done on call, rather than on a regular schedule. Yet some nations think "educational firemen" are so essential that in some of its schools they have institutionalized this role in the form of specialists who will come on call to help solve the problem when a number of pupils are not learning as they should. In El Salvador recently, help was sought from the evaluation research team when

second-term tests revealed a high incidence of failures in mathematics. Questionnaires and interviews with teachers and students showed that among other problems students had simply been unable to keep up with the pace of the course. This finding was fed back to the program staff quickly enough so that, instead of introducing additional new material during the last month of the following term the teleteacher used that time for review of the year's work.

Not many ITV projects have either "firemen" to put out "fires" that are discovered, or resident research teams to make studies on order (indeed, this latter cannot be done very often in El Salvador). The problem is, then, who can be assigned to look into and diagnose problems that the feedback reports turn up? The supervisor is most often given this task, but if he is to do it well he must have time available and he must be trained for this kind of problem-solving.

Review of programs and materials

The most valuable feedback comes from studies or observation on the actual use of broadcasts and related materials in the classroom. However, there is also a great deal to be gained by expert review of tapes and materials.

This typically happens at the end of the year, when it has to be decided what programs to remake and what class and teacher materials to revise. It is typically done by members of the program department. A great deal can be gained by adding certain other viewpoints to the

reviewer group. The most obvious addition is teachers and supervisors, who can speak of the materials from their experience with them. Another important viewpoint is that of experts who are familiar with television teaching in other countries, and can introduce information as to how some of the problems of the course have been solved elsewhere, and how some of the subject matter is taught on television elsewhere. It is, of course, extremely hard for programmers and teleteachers to look with a fresh viewpoint at their own work. Addition of experienced reviewers from outside the program group would be of great help in this respect.

An ideal program of feedback for ITV

There probably is no such thing as an "ideal" program for obtaining feedback information, because information from the different channels begins to overlap, and at some point the planners and administrators of an ITV project must decide how much overlap they want to pay for, and what combination of methods -- within their capabilities -- will most efficiently give them the amount of feedback they feel they need. Therefore, rather than ideal systems, there are adequate or inadequate systems, efficient or inefficient ones.

In estimating the adequacy of arrangements for feedback, an ITV project director might well raise the following questions:

1. In preparing instructional programs to be televised, does he have the guidance of previous tests of programs of the same kind on the same type of pupils?

2. Does he use pupils in the studio frequently enough so that the teleteacher can pace his teaching?

3. Does he get test results back from the classroom frequently enough so that the television teacher can be guided by them?

4. Does he obtain regular comments and evaluations, in a useful form, from the classroom teachers?

5. Does he really know what kind of teaching is going on, around the television, in the classroom?

6. Does he have sufficient information on attitudes of pupils and teachers toward television teaching in general, and their televised courses in particular?

7. When he discovers a learning or attitude problem, does he have someone to study it sufficiently to find out what to do about it?

8. When the time comes to review the program in order to decide what changes shall be made and what programs remade for the next year, is he able to bring to that review process not only the judgment of his program people, but also the experience of his teachers and supervisors, and the experience of skilled observers who have known ITV elsewhere?

The feedback system in El Salvador

Checking what El Salvador has so far done to provide feedback to its ITV programmers, this is what we find:

Pretesting programs -- not presently done in El Salvador.

Pupils in the studio -- there are no studio classes, but pupils are occasionally used on camera to take part in programs.

Immediate electronic feedback from the classroom -- there are no provisions for this system in El Salvador.

Regular testing on program content -- the schools themselves give achievement tests at the end of each trimester; the research and evaluation team gives achievement tests at the beginning and end of each school year. Classroom test results are, therefore, available to the studio teacher not oftener than every three months.

Regular comments from classroom teachers -- classroom teachers have been asked to fill out a feedback form on courses about once every two weeks.

Regular observation of classrooms -- a utilization supervisor visits each classroom once a week, on the average; these supervisors are now trying to perfect a guide for classroom observation. Some studio teachers visit classrooms often enough to see how their programs are being received and used.

Reports on attitudes -- the research and evaluation team gives attitude tests to pupils and teachers at the beginning and the end of each school year.

Studies of specific problems -- the research and evaluation team has investigated one such problem, but has limited time for such work.

Review of programs and materials -- this is undertaken by the program staff at the end of the school year; an average of one-third to one-half of programs are being remade from last year.

Some suggestions

It is evident that El Salvador already has a number of feedback channels -- in fact, more than most ITV projects because of its strong utilization program and the presence of a research and evaluation team. We venture the following suggestions:

(1) Because of the number of feedback channels already available in the El Salvador project, it would seem desirable to make sure that these channels are working as efficiently as possible before adding new ones. For example, there might be an effort to perfect the teachers' feedback form to make it as practically useful as possible. The present effort of the utilization group to perfect their classroom observation guide is obviously of importance. Different ways of using students to furnish incidental feedback as participants in programs might well be tried. And studio teachers might well be encouraged to visit classrooms as often as possible.

(2) The easiest and probably most practically useful addition to the present feedback program would be a five-minute test in each televised course each week, so that it could be known whether at least the essentials of the course are being understood and learned -- in time to do something about it. Needless to say, this kind of feedback would be more useful, during 1970, in the eighth grade, where programs are being made new, than in the seventh, where programs will already have been revised and taped on the basis of the previous year's experience.

(3) When it becomes possible, El Salvador should consider pretesting prototype programs for each new series.

[Reference to research reports in this memorandum are to titles which are listed and described in Chu and Schramm, Learning from Television: What the Research Says. Washington: NAEB, 1967.]

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